interTwin: a digital twin engine for science
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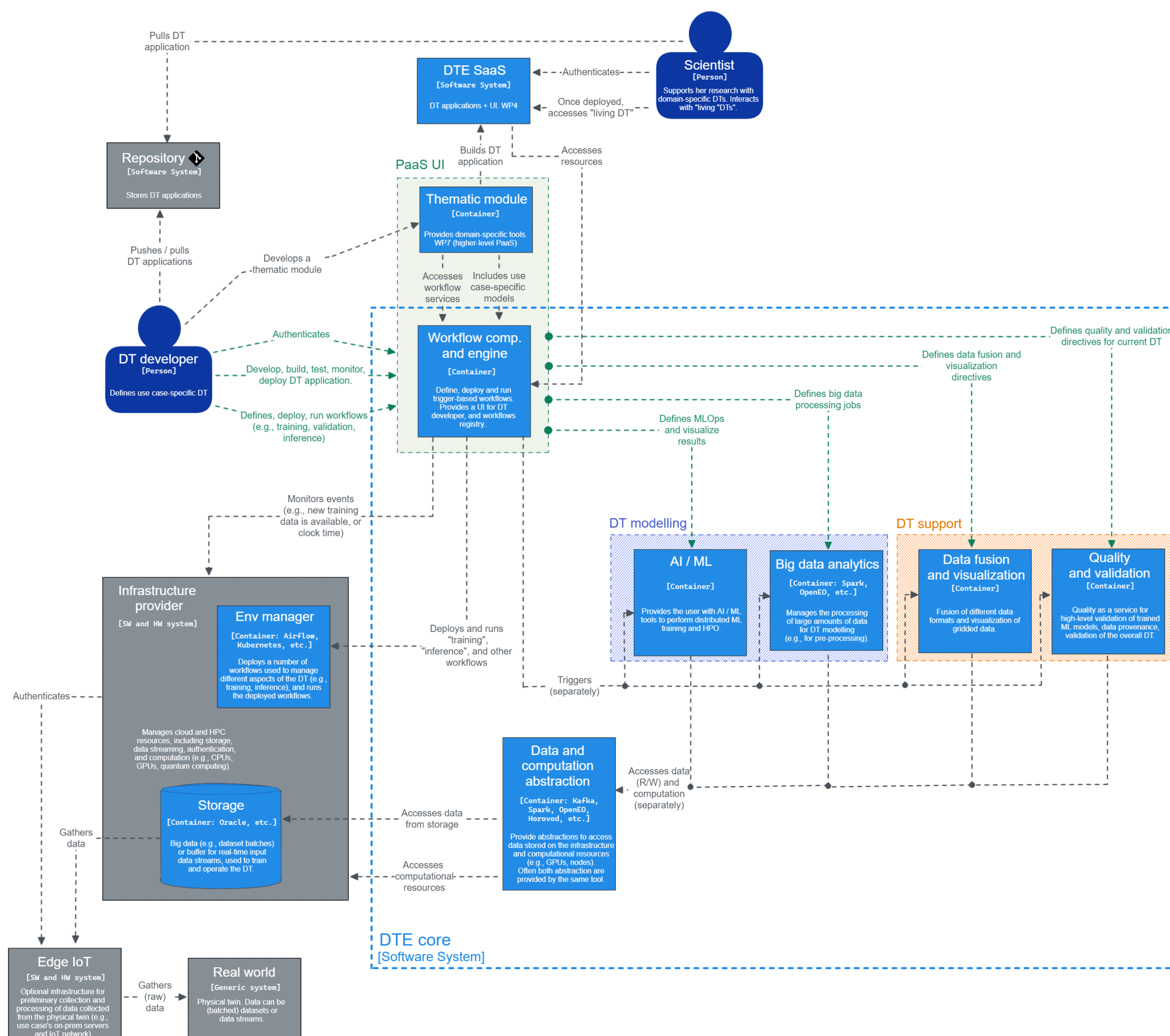**CERN openlab**

What is interTwin?

- EC project to leverage the concept of 'Digital Twins' for a wide array of sciences

- The core modules of interTwin enable the development and management of data-driven and compute-intensive applications by providing capabilities such as workflow composition, data fusion, AI workflow and method lifecycle management, real time acquisition and data analytics, validation, verification, and uncertainty tracing for model quality.

Scientific use cases for Digital Twins

Radio astronomy · Gravitational Waves · Flood Warnings · Cyclones
Detector simulation · Lattice QCD · Wildfires · Droughts

Physics   **Climate**

A digital twin engine for science

- It is an open-source platform based on open standards.

- It offers the capability to integrate with application-specific Digital Twins.

- Its functional specifications and implementation are based on
  - a co-designed interoperability framework
  - conceptual model of a DT for research - the DTE blueprint architecture.

- The DTE engine provides a PaaS to the DT developer, which defines new DT applications via domain-specific thematic modules. Once deployed on the infrastructure, these DT applications are accessed as a SaaS by scientists with negligible engineering overheads. Scientists run experiments on DT applications

Computing infrastructure

InterTwin is focused on enabling communication and interoperability between High Performance Computing (HPC), High Throughput Computing (HTC), and cloud resource providers. It aims to develop homogeneous security and access policies, as well as resource accounting, in order to facilitate access to resources between.

Supporting activities

interTwin is supported by various national and international initiatives, including ENES, GEO, openEO, and the INDIGO-DataCloud community. The RAISE project contributes novel AI methodologies and solutions towards exascale computing. interTwin also expands the ESCAPE Data Lake and C-SCALE blueprints, and uses a compute platform that federates capacity from the EGI Federation, PRACE and EuroHPC.

The partners

European Commission